

**From:** [Jen Mott](#)  
**To:** [Dana Bayuk](#)  
**Cc:** [Jen Mott](#); [John Edwards](#); [Ben Hung](#); [Ben Johnson](#); [Bruce K Marvin \(bmarvin@geosyntec.com\)](#); [Cindy Bartlett \(CBartlett@Geosyntec.com\)](#); [Scott Coffey](#); [Carl Stivers](#); [HAFLEY Dan](#); [DeMaria, Eva](#); [LARSEN Henning](#); [PETERSON Jenn L](#); [James Peale](#); [John Renda](#); [Kelly Titkemeier \(ktitkemeier@maulfoster.com\)](#); [Mary Benzinger \(mbenzinger@maulfoster.com\)](#); [POULSEN Mike](#); ["Mike Murray"](#); [Madi Novak](#); [Myron Burr \(myron.burr@siltronic.com\)](#); [Patty Dost](#); [Lance Peterson \(PetersonLE@cdmsmith.com\)](#); [Bob Wyatt](#); [Rachel Melissa \(RMelissa@pearllegalgroup.com\)](#); [Rob Ede](#); [Sheldrake, Sean](#); [Sarah Riddle](#); [Tim Stone](#); [Vipul Srivastava \(VSrivastava@Geosyntec.com\)](#)  
**Subject:** FW: Proposed Revision to NW Natural Gasco Groundwater Monitoring Program - Update  
**Date:** Monday, March 20, 2017 1:16:50 PM  
**Attachments:** [COMPREHENSIVE GW FRAMEWORK\\_03\\_17\\_17.xlsx](#)

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Dana,

Please see below and attached from John Renda.

Please contact John with any questions.

Thank you,  
Jen Mott ☺  
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**From:** John Renda  
**Sent:** Monday, March 20, 2017 12:53 PM  
**To:** Jen Mott <[jmott@anchorqea.com](mailto:jmott@anchorqea.com)>  
**Cc:** Ben Hung <[bhung@anchorqea.com](mailto:bhung@anchorqea.com)>  
**Subject:** RE: Proposed Revision to NW Natural Gasco Groundwater Monitoring Program - Update

Dana –

This email is to follow up on our conversations on March 6 and 17, 2017. The email chain below provides context for our discussions and the February 15, 2017 email from John Edwards to you has been inserted for completeness. On March 6<sup>th</sup>, 2017, you provided verbal approval of the February 15<sup>th</sup> email with the addition of herbicide and Pesticide testing at PW-1L. On our March 17<sup>th</sup> call, you requested that we continue monitoring 5 wells on a semiannual basis (MW-39F, MW-40F, MW-1-55, MW-2-61, and MW-22U).

Attached is the Excel file; “comprehensive groundwater framework”. The “Record of Revisions\_thru\_031717” tab identifies each change based on the emails below and follow-up communications. The “Updated March 17, 2017” tab includes the revisions. As requested by DEQ, there are no changes to the monitoring frequency of wells on the Siltronic portions of the Gasco OU. The NW Natural portions of the Gasco OU include piezometers and extraction wells for the 1Q

monitoring event and the 5 wells identified above.

DEQ also approved the removal of 6 monitoring wells on the Siltronic OU (formerly referred to as OU2) that were part of the NW Natural monitoring program.

We are scheduled to begin sampling this week. Please let me know if you have any questions.

**John J. Renda, RG**

**ANCHOR QEA, LLC**

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Feb 15, 2017 email from John Edwards to Dana Bayuk:

Hi Dana. After our call I have been thinking about how to simplify our proposal that hopefully avoids having to assess each well, saves both agency and NW Natural review time, and maybe saves paperwork. This is still in the brainstorm mode as I want to get your thoughts before submitting a "public" proposal.

This approach simplifies the issue of proposing and evaluating individual well changes and therefore saves time and paperwork.

Lab testing parameters stay as they are now. The following would go into effect with the March, 2017 sampling event and extend until the September, 2018 sampling event, or until we have an Upland ROD, whichever comes first.

1. Twice per year HC&C monitoring continues: The Sept 2017/18 sampling rounds continue with all of the HC&C related wells in the current program, but the March 2017/18 rounds only sample the PW extraction wells and PZ piezometer sampling points. This allows us to continue the trend analyses on all HC&C monitoring wells based on the September sampling of all wells in the current program. And it allows us to have two samples per year from the extraction wells and river piezometers.
2. Once per year (September) sampling of RIHERA wells located on NW Natural property as we are currently doing.
3. Twice per year (March and September) sampling of RIHERA wells located on the Allen tract as we are currently doing. Submit proposal to shift to once per year sampling after DEQ has

reviewed the RI/RA addendum for the NW Natural portion of the Siltronic OU.

Under this simplified approach it doesn't seem like there is a need for more detailed analysis of individual HC&C upland wells that would be dropped from the March 2017/18 sampling events. Using that logic we would provide DEQ with a table of the current comprehensive monitoring program that highlights the HC&C related upland nearshore wells that would be dropped from the March 2017/18 sampling events. Using that approach it doesn't seem like we would need to provide cross sections and maps as DEQ previously requested. But we can still do that if needed.

If you like this simplified approach we will send out a much simplified proposal right away. I would be happy to call you to discuss this and minimize back and forth emails.

Thanks

John

**John E. Edwards, RG, CEG**

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**From:** BAYUK Dana [<mailto:dana.bayuk@state.or.us>]

**Sent:** Thursday, February 09, 2017 8:58 AM

**To:** John Edwards <[jedwards@anchorage.com](mailto:jedwards@anchorage.com)>

**Cc:** Ben Hung <[bhung@anchorage.com](mailto:bhung@anchorage.com)>; Ben Johnson <[bjohnson@anchorage.com](mailto:bjohnson@anchorage.com)>; Bruce K Marvin (<[bmarvin@geosyntec.com](mailto:bmarvin@geosyntec.com)> <[bmarvin@geosyntec.com](mailto:bmarvin@geosyntec.com)>); Cindy Bartlett (<[CBartlett@Geosyntec.com](mailto:CBartlett@Geosyntec.com)> <[cbartlett@geosyntec.com](mailto:cbartlett@geosyntec.com)>); Scott Coffey (<[coffeyse@cdmsmith.com](mailto:coffeyse@cdmsmith.com)> <[coffeyse@cdmsmith.com](mailto:coffeyse@cdmsmith.com)>); Carl Stivers (<[cstivers@anchorage.com](mailto:cstivers@anchorage.com)>); HAFLEY Dan (<[dan.hafley@state.or.us](mailto:dan.hafley@state.or.us)>); Eva DeMaria (<[DeMaria.Eva@epa.gov](mailto:DeMaria.Eva@epa.gov)> <[demaria.eva@epa.gov](mailto:demaria.eva@epa.gov)>); LARSEN Henning (<[henning.larsen@state.or.us](mailto:henning.larsen@state.or.us)>); PETERSON Jenn L (<[jenn.l.peterson@state.or.us](mailto:jenn.l.peterson@state.or.us)>); Jen Mott (<[jmott@anchorage.com](mailto:jmott@anchorage.com)>); James Peale (<[jpeale@maulfoster.com](mailto:jpeale@maulfoster.com)>); John Renda (<[jrenda@anchorage.com](mailto:jrenda@anchorage.com)>); Kelly Titkemeier (<[ktitkemeier@maulfoster.com](mailto:ktitkemeier@maulfoster.com)> <[ktitkemeier@maulfoster.com](mailto:ktitkemeier@maulfoster.com)>); Mary Benzinger (<[mbenzinger@maulfoster.com](mailto:mbenzinger@maulfoster.com)> <[mbenzinger@maulfoster.com](mailto:mbenzinger@maulfoster.com)>); POULSEN Mike (<[mike.poulsen@state.or.us](mailto:mike.poulsen@state.or.us)>); 'Mike Murray' (<[mmurray@maulfoster.com](mailto:mmurray@maulfoster.com)>); Madi Novak (<[mnovak@maulfoster.com](mailto:mnovak@maulfoster.com)>); Myron Burr (<[myron.burr@siltronic.com](mailto:myron.burr@siltronic.com)> <[myron.burr@siltronic.com](mailto:myron.burr@siltronic.com)>); Patty Dost (<[pdost@pearllegalgroup.com](mailto:pdost@pearllegalgroup.com)>); Lance Peterson (<[PetersonLE@cdmsmith.com](mailto:PetersonLE@cdmsmith.com)>)

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**Subject:** RE: Proposed Revision to NW Natural Gasco Groundwater Monitoring Program - Notes from January 20 Meeting

Good morning John.

DEQ reviewed your e-mail summarizing our meeting and conference call on January 20, 2017. Our comments are provided below and are intended to confirm or clarify information provided in your e-mail based on the main messages we communicated on January 20<sup>th</sup>.

- DEQ confirms that we will not consider reducing or removing monitoring wells that NW Natural is responsible for sampling on the Siltronic portion of the Gasco Operable Unit (Gasco OU) until we've reviewed and approved the RI/HERA Addendum.
- DEQ clarifies that NW Natural should continue sampling uplands monitoring wells in the Gasco OU (at least annually) to maintain groundwater data trends through the FS.
- DEQ confirms that in addition to having established groundwater COC trends, reductions in the number of monitoring wells (or frequency of sampling at extraction wells) located along the shoreline will be considered subject to NW Natural documenting that:
  - Groundwater chemistry data collection objectives of the installations have been met;
  - Representative groundwater data are being collected for the Fill WBZ, Upper Alluvium WBZ, Lower Alluvium WBZ, and Deep Lower Alluvium WBZ along the length of Gasco OU shoreline for all the COC parameter groups;
  - Wells provide duplicative data compared to nearby wells constructed in the same water-bearing zone as shown; and
  - Installations are not part of the HC&C system hydraulic performance monitoring network.
- DEQ confirms that a geologic cross-section parallel to the shoreline of the Gasco OU should be provided to graphically show modifications NW Natural is proposing to the groundwater monitoring program.
- DEQ clarifies that any proposal NW Natural develops regarding reducing the locations and/or frequency of sampling of piezometers must be reviewed and approved by EPA.

In addition, DEQ confirms that sampling and analysis of monitoring wells in the Siltronic OU is in the process of being transitioned to Siltronic Corporation.

Please feel free to contact me with questions regarding this e-mail.

Dana

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**From:** Jen Mott [<mailto:jmott@anchoragea.com>]

**Sent:** Friday, January 27, 2017 3:29 PM

**To:** BAYUK Dana

**Cc:** Bruce K Marvin ([bmarvin@geosyntec.com](mailto:bmarvin@geosyntec.com)); Cindy Bartlett ([CBartlett@Geosyntec.com](mailto:CBartlett@Geosyntec.com)); HAFLEY Dan; LARSEN Henning; PETERSON Jenn L; POULSEN Mike; Sarah Riddle; Eva DeMaria ([DeMaria.Eva@epa.gov](mailto:DeMaria.Eva@epa.gov)); John Renda; Bob Wyatt; Patty Dost; John Edwards; Carl Stivers; Ben Hung; Rachel Melissa ([RMelissa@pearllegalgroup.com](mailto:RMelissa@pearllegalgroup.com)); Sean Sheldrake; Scott Coffey ([coffeyse@cdmsmith.com](mailto:coffeyse@cdmsmith.com)); Rob Ede; Lance Peterson ([PetersonLE@cdmsmith.com](mailto:PetersonLE@cdmsmith.com)); James Peale; Kelly Titkemeier ([ktitkemeier@maulfoster.com](mailto:ktitkemeier@maulfoster.com)); Madi Novak; Mary Benzinger ([mbenzinger@maulfoster.com](mailto:mbenzinger@maulfoster.com)); 'Mike Murray'; Myron Burr ([myron.burr@siltronic.com](mailto:myron.burr@siltronic.com)); Vipul Srivastava ([VSrivastava@Geosyntec.com](mailto:VSrivastava@Geosyntec.com)); Ben Johnson; Tim Stone; Jen Mott

**Subject:** RE: Proposed Revision to NW Natural Gasco Groundwater Monitoring Program - Notes from January 20 Meeting

Dana,

The following email is provided on behalf of John Edwards.

Hello Dana. This email provides draft notes from our January 20 meeting held to discuss the September 12, 2016 Anchor QEA Memorandum, Proposed Revisions to the NW Natural Gasco Groundwater Monitoring Program (attached). The January 20 meeting was attended by you, Henning Larsen, John Renda, Lance Peterson, Rob Ede, and myself. The current groundwater monitoring program is termed the integrated program because it includes the wells in the routine monitoring program and wells in the HC&C source control monitoring program. DEQ requested that these meeting notes be focused on what will be provided in the revised proposal.

Anchor QEA began the meeting by providing a summary of the September proposal. This included a review of the water quality trend graphs for some of the wells whose trends appear to be affected by HC&C operation. DEQ requested that we provide the statistical method that is used to plot the water quality trend lines on the graphs provided in the proposal. As a follow-up to this request, it was confirmed that the trend lines were created using logarithmic regression.

We then had a lengthy discussion on the proposed monitoring plan and our technical justification for adjusting it.

Anchor QEA requested DEQ to provide written comments on the September proposal to improve our ability to provide an acceptable revised proposal. DEQ requested us to revise and resubmit the proposal based on the discussion held during this meeting.

When revising the proposal DEQ asked us to consider the following:

Retain some of the river piezometers because they provide information on the influence of the

HC&C system.

Select wells that provide geographic coverage of the site, rather than relying solely on which wells appear to be affected by the HC&C system.

Check back in the records to make sure the revised proposal meets the HC&C monitoring objectives, e.g. document water quality trends and obtaining gross chemistry (cation/anion) data at the extraction wells.

Does our revised monitoring network provide adequate geographic coverage for the upland FS preliminary indicator compounds?

Does our revised monitoring network include adequate geographic coverage of upland monitoring wells from the routine monitoring program?

Provide a nearshore cross section parallel to the shoreline that highlights which wells and piezometers are being retained in the monitoring program. This will be used to review adequate geographic coverage of the well network.

DEQ informed us that they don't want NW Natural to stop monitoring any wells that we are currently responsible for on the Gasco OU portion of the Siltronic property until the RIRA Addendum has been reviewed by DEQ. Also that Siltronic will soon be taking over monitoring of all wells on Siltronic property located outside of the Gasco OU, but DEQ is not sure when that will happen.

Anchor QEA said that the process of revising the proposal and obtaining DEQ agreement on a revised groundwater monitoring program needs to be completed before the next scheduled event in March, 2016. DEQ agreed that we need to complete this process to meet that schedule.

Please review and approve these notes as soon as possible, or provide comment as needed.

Thanks

John

[Please contact John with any questions.](#)

Thank you,  
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---

**From:** Jen Mott

**Sent:** Monday, September 12, 2016 3:31 PM

**To:** Dana Bayuk <[BAYUK.Dana@deq.state.or.us](mailto:BAYUK.Dana@deq.state.or.us)>

**Cc:** Bruce K Marvin ([bmarvin@geosyntec.com](mailto:bmarvin@geosyntec.com)) <[bmarvin@geosyntec.com](mailto:bmarvin@geosyntec.com)>; Cindy Bartlett ([CBartlett@Geosyntec.com](mailto:CBartlett@Geosyntec.com)) <[CBartlett@Geosyntec.com](mailto:CBartlett@Geosyntec.com)>; Dan Hafley <[HAFLEY.Dan@deq.state.or.us](mailto:HAFLEY.Dan@deq.state.or.us)>; LARSEN Henning <[henning.larsen@state.or.us](mailto:henning.larsen@state.or.us)>; Jennifer Peterson ([peterson.jennifer@deq.state.or.us](mailto:peterson.jennifer@deq.state.or.us)) <[peterson.jennifer@deq.state.or.us](mailto:peterson.jennifer@deq.state.or.us)>; Mike Poulsen ([poulsen.mike@deq.state.or.us](mailto:poulsen.mike@deq.state.or.us)) <[poulsen.mike@deq.state.or.us](mailto:poulsen.mike@deq.state.or.us)>; Sarah Riddle <[sriddle@pearllegalgroup.com](mailto:sriddle@pearllegalgroup.com)>; Eva DeMaria ([DeMaria.Eva@epa.gov](mailto:DeMaria.Eva@epa.gov)) <[DeMaria.Eva@epa.gov](mailto:DeMaria.Eva@epa.gov)>; John Renda <[jrenda@anchoragea.com](mailto:jrenda@anchoragea.com)>; Bob Wyatt <[rjw@nwnatural.com](mailto:rjw@nwnatural.com)>; Patty Dost <[pdost@pearllegalgroup.com](mailto:pdost@pearllegalgroup.com)>; John Edwards <[jedwards@anchoragea.com](mailto:jedwards@anchoragea.com)>; Carl Stivers <[cstivers@anchoragea.com](mailto:cstivers@anchoragea.com)>; Ben Hung <[bhung@anchoragea.com](mailto:bhung@anchoragea.com)>; Rachel Melissa ([RMelissa@pearllegalgroup.com](mailto:RMelissa@pearllegalgroup.com)) <[RMelissa@pearllegalgroup.com](mailto:RMelissa@pearllegalgroup.com)>; Sean Sheldrake <[sheldrake.sean@epa.gov](mailto:sheldrake.sean@epa.gov)>; Scott Coffey ([coffeyse@cdmsmith.com](mailto:coffeyse@cdmsmith.com)) <[coffeyse@cdmsmith.com](mailto:coffeyse@cdmsmith.com)>; Rob Ede <[robe@hahnenv.com](mailto:robe@hahnenv.com)>; Lance Peterson ([PetersonLE@cdmsmith.com](mailto:PetersonLE@cdmsmith.com)) <[PetersonLE@cdmsmith.com](mailto:PetersonLE@cdmsmith.com)>; James Peale <[jpeale@maulfoster.com](mailto:jpeale@maulfoster.com)>; Kelly Titkemeier ([ktitkemeier@maulfoster.com](mailto:ktitkemeier@maulfoster.com)) <[ktitkemeier@maulfoster.com](mailto:ktitkemeier@maulfoster.com)>; Madi Novak <[mnovak@maulfoster.com](mailto:mnovak@maulfoster.com)>; Mary Benzinger ([mbenzinger@maulfoster.com](mailto:mbenzinger@maulfoster.com)) <[mbenzinger@maulfoster.com](mailto:mbenzinger@maulfoster.com)>; 'Mike Murray' <[mmurray@maulfoster.com](mailto:mmurray@maulfoster.com)>; Myron Burr ([myron.burr@siltronic.com](mailto:myron.burr@siltronic.com)) <[myron.burr@siltronic.com](mailto:myron.burr@siltronic.com)>; Vipul Srivastava ([VSrivastava@Geosyntec.com](mailto:VSrivastava@Geosyntec.com)) <[VSrivastava@Geosyntec.com](mailto:VSrivastava@Geosyntec.com)>; Ben Johnson <[bjohnson@anchoragea.com](mailto:bjohnson@anchoragea.com)>; Tim Stone <[tstone@anchoragea.com](mailto:tstone@anchoragea.com)>; Jen Mott <[jmott@anchoragea.com](mailto:jmott@anchoragea.com)>

**Subject:** Proposed Revision to NW Natural Gasco Groundwater Monitoring Program

Dana –

Attached is the Proposed Revision to the NW Natural Gasco Groundwater Monitoring Program. NW Natural is prepared to begin the next scheduled monitoring event once we have agreement on the revisions to the monitoring program.

If you have any questions, please contact John Renda or John Edwards.

Thank you,  
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